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ABSTRACT

Despite the well-known potential of computer technology to promote achievement and motivational gains among social studies learners, there is very little reported use of microcomputers in social studies classrooms. Factors contributing to this lack of use include: (a) lack of microcomputers for teacher use, (b) lack of high quality software, (c) ambivalence of research findings on the effectiveness of computer based education, (d) lack of teacher knowledge and skills regarding the instructional use of computers, and (e) lack of software that is integrated into the social studies curriculum. This study surveyed secondary social studies teachers to determine: (a) the degree to which they are integrating microcomputers into their instruction, (b) the nature and extent of this integration, and (c) the incentives or barriers to integrating microcomputers into social studies. Research methodology is examined and results are discussed and presented in tables. Findings reveal a higher level of computer use in secondary social studies instruction than previously reported, and positive attitudes toward computer integration in the classroom. Computer usage continues to be low, however, and one major barrier to increased use is insufficient teacher preparation. Seventy-four percent of respondents had no computer experience. Another is the lack of available computers for classroom use. The paper presents a profile of computer users and non-users, describes how microcomputers are used in social studies classes, assesses the influence of context variables, such as geographic location, on microcomputer use, and proposes responses to the study findings designed to improve social studies computer use. A 29-item bibliography is included. (GEA)

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Survey of Microcomputer Use in Secondary Social Studies Classrooms

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Abstract

The purpose of this study was to assess the impact of microcomputers on social studies teaching and learning at the secondary level. Secondary social studies teachers were surveyed to determine: (a) the degree to which social studies teachers are integrating microcomputers into their instruction; (b) the nature and extent of this integration; and (c) the incentives or barriers to the use microcomputers. Five hundred questionnaires were mailed to a systematic random sample of social studies teachers in the United States. After the initial and two follow-up mailings, 262 usable questionnaires were collected, a return rate of 52.4%. Almost one-third of the respondents indicated that they use microcomputers in their classes, however the frequency of use was low. The non-users reported lack of experience and training as well as difficulties in the supervision and organization of instructional computing sessions as primary reasons for not using microcomputers in social studies.

MICROCOMPUTER USE IN SECONDARY SOCIAL STUDIES CLASSROOMS

Promise of Computer Technology and the Response of Schools

Since their introduction into the schools in the late 1970's, microcomputers have been hailed by many as a technology that would revolutionize traditional means of teaching and learning (e.g., Caissy, 1987; Senn, 1983; Walker, 1983). The literature on microcomputers and education is filled with articles by advocates claiming that microcomputers have the potential to promote more active learning, more effective and efficient learning, less mental drudgery, learning nearer the speed of thought, more individualized learning, increased student motivation, more varied sensory and conceptual modes, and the list goes on.

Microcomputers are now a familiar part of the educational landscape. There has been a tremendous amount of attention, energy, and resources devoted to microcomputer technology in education in recent years with visible results. In the short period between 1983 and 1985 U.S. elementary and secondary schools quadrupled their number of microcomputers from about 250,000 to over one million (Becker, 1986). It has been estimated that during this time the amount schools spent on microcomputer hardware and software was equal to as much as one-third the amount spent on books for instruction in all subject-matters and grade levels (Becker, 1984). In addition, Becker (1986) reported that: (a) three-quarters of the schools which had not previously used microcomputers began to do so, (b) the

proportion of secondary schools with 15 or more microcomputers rose from 10% to 56%, and (c) in 1984-85 approximately 15 million students and 500,000 teachers used microcomputers as part of their school's instructional program.

Why has this innovation spread so rapidly and broadly across the nation's schools? There are several possible motives for the response of schools. First, with the pervasiveness of computers in our daily lives, a general society-wide interest in the applicability of computers has developed and spread across a range of contexts, including the schools (Becker, 1984).

Second, widespread belief that America faces an uncertain economic future has sparked interest in technology-based education. Lapointe and Martinez (1988) point out similarities between the national mood of the post-Sputnik 1950's and the 1980's when economic competitiveness has been labeled "the Sputnik of the Eighties" (Jennings, 1987). This mood is reflected in Caissy's (1987) justification for including computers in the school curriculum:

> Our economic strength in the future lies in developing and expanding high-tech fields....Many futurist predict that within the next decade, the majority of jobs in our society will be information/technology based in some way....Clearly, [students] must be prepared to

work in an information/computer-based high-tech society. (p. 9)

Thirdly, many educators and parents have accepted the plausibility of the instructional value of computers. Becker (1984) points out that "by virtue of their nature--interactive, colorful, manipulable, and logical--the new breed of microcomputers appears to have attractive features for providing instruction and intellectual challenge for adults, adolescents, and children" (p. 4). Despite how plausible the instructional value of computers may be, research findings in support of using computers in education are equivocal.

Research on the effectiveness of computer-based instruction has been conducted since the mid-1960's. Recent efforts to synthesize research findings in this area have concluded that computer-based education programs are more effective in raising students' scores on standardized achievement tests than alternative approaches (Bangert-Drowns, Kulik, & Kulik, 1985; Kulik, Bangert-Drowns, & Williams, 1983; Kulik, Kulik, & Bangert-Drowns, 1985; Niemiec & Walberg, 1983). However, less systematic computer activities aimed at affecting higher order thinking skills have had a more mixed result (Becker, 1987).

These recent meta-analyses have been criticized for using a disproportionate number of older and perhaps obsolete studies.

> All but two of the more than 200 studies contained in the Kulik et al. and Niemiec and Walberg meta-analyses were published prior to 1983 [one year after microcomputers began entering in a substantial number of schools]. Even more significantly, studies involving microcomputers constitute only one out of 64 studies in the two most recent Kulik, et al. reviews and only two out of 224 studies in the Niemiec and Walberg meta-analysis. (Becker, 1987, p. 6)

This is a significant criticism of the state of knowledge about the effectiveness of computers in education since microcomputers are the dominant technology today.

Becker (1987) has recently completed a best-evidence synthesis of recent research that used only microcomputers. The studies he included dealt with math, reading, and language arts in the upper elementary grades. Based upon his criteria for inclusion in the review, Becker found only one study that dealt with microcomputers in the high school and none that involved social studies learning.

After his best-evidence synthesis of a restricted sample of studies, Becker concluded that even if all the studies were considered "to be without damning flaws, together they do not come close to providing prescriptive data for deciding whether and how to use computers as adjuncts for instruction..." (1987, p. 23). Thus the existing evidence of computer effectiveness is "very scanty."

Computers and Social Studies Education

In the most comprehensive review of research on computers in K-12 social studies, Ehman and Glenn (1987) document how the social studies has been impervious to the computer revolution in schools. They concluded that despite the well known potential of computer technology to promote achievement and motivational gains among social studies learners, there is very little reported use of the computer in social studies classrooms. Several factors are suggested as problem areas contributing to the lack of impact computers have had on social studies teaching and learning. These factors include: (a) lack of microcomputers for teachers use, (b) lack of high quality software, (c) ambivalence of research findings on the effectiveness of computer-based education, (d) lack of teacher knowledge and skills regarding the instructional use of computers, and (e) lack of software that is integrated into the social studies curriculum.

However, research focusing specifically on computers in social studies has been scant and Ehman and Glenn reported that their conclusions were impressionistic and based-upon limited empirical evidence. Other researchers agree that the impact of microcomputers and other technology on social studies teaching, learning, and curriculum has not been broadly investigated (e.g., Nelson and Shaver, 1985; White, 1988).

The purpose of the study reported in this article was to address this need by surveying secondary social studies teachers to determine: (a) the degree to which social studies teachers are integrating microcomputers into their instruction; (b) the nature and extent of this integration; and (c) the incentives or barriers to integrating microcomputers into social studies. This study focused on the instructional uses of microcomputers, including both computer assisted instruction (microcomputer use that guides students through some type of pre-programmed activity), as well as microcomputer applications (e.g., word processing and databases). Other types of microcomputer use, such as computer-managed instruction or programming were excluded from consideration.

Procedures

Population

A summary description of schools represented in the sample is presented in Table 1. The school context of each of the respondents was categorized on two factors: (a) National Assessment of Educational Progress regions, and (b) type of community served by the school district. Of the 262 respondents, 44 were from the northeast, 52 from the southeast, 97 from the central region, and 69 from the west. The majority of respondents were from urban or suburban school districts.

Seventy percent of the respondents were men and the average length of teaching experience was 14 years. Over

80% of the respondents had more than 10 years of teaching experience. Fifty percent were teaching at the high school level. 38% taught at the middle school level, and 12% taught at both middle and high school levels.

The size of the social studies faculty in the schools represented by the respondents ranged from one to 38, with an average of 5.5 social studies teachers per school. Forty-four percent of the schools had 3 or fewer social studies teachers on their faculties.

Questionnaire

A mailed questionnaire was the primary instrument for obtaining data from the sample. A pilot questionnaire containing 23 multiple choice and 2 short answer questions was developed and pretested. The pilot study sampled 150 elementary and secondary social studies teachers in the northeast and yielded an 82% response rate. Based upon the pretest results and further review of the questionnaire by social studies teachers and a panel of experienced survey researchers, a revised instrument was developed.

The revised questionnaire containing 29 multiple choice and 4 open-ended items was mailed to 500 secondary social studies department chairs chosen in a systematic random fashion from Patterson's American Education (Moody, 1987). The items on the revised questionnaire were designed in an effort to investigate the potential differences between those teachers using and not using microcomputers as part of their regular instruction. The questionnaire items were

organized into the following categories: (a) measures of teachers' attitudes toward and experiences with microcomputers; (b) background information on non-users, including reasons for not integrating microcomputers into social studies instruction; (c) background information on microcomputer users, including the nature and extent of the integration of microcomputers in social studies classes; and (d) a description of the school contexts, including information on the social studies faculty and school-wide responses to calls for integrating microcomputers into the curriculum. After the initial and two follow-up mailings 262 usable questionnaires were returned (52.4%). Limited resources precluded additional follow-ups with non-respondents to investigate differences with respondents. It is possible that teachers interested in or using microcomputers would have been more likely to respond to the survey, therefore the findings of this study may be exaggerated in favor of microcomputer use in social studies.

Results and Discussion

Extent of Microcomputer Use in Social Studies

The most current statistics available indicate that of all U.S. middle and high schools, 95% and 97% respectively use microcomputers for instruction (Becker, 1986). However, the number of microcomputers for instructional use is limited (i.e., only 47% of the middle schools and 68% of high schools have 15 or more microcomputers), and as a

result Becker reports that only 15% of secondary teachers use microcomputers regularly in instruction.

The level of microcomputer use in social studies has been reported to be much lower than average, although increasing in recent years. According to Becker's (1986) survey of principals and "primary computer-using teachers," only 1 percent of computer use in grades K-3 was for social studies, 4% of computer use in grades 4-8, and 1% in grades 9-12. The 1986 National Assessment of Educational Progress survey of students' computer-related knowledge, skills, and experience indicated that large percentages of students had never used a computer in the traditional subjects. In the NAEP study 12% of grade 3 students, 10% of grade 7 students, and 5% of grade 11 students reported some use of computers in social studies classes (Lapointe & Martinez, 1988).

In the present study, 29% of the secondary social studies teachers responding reported using microcomputers in their social studies classes during the past year. Of the non-users, 14% reported using some type of computer assisted instruction in previous years.

Respondents were also asked to report on the frequency with which social studies colleagues in their school used microcomputers as part of their instructional plan. They indicated that 16% of their colleagues regularly used computers for instruction (i.e., 1 hour/week) and that over 70% never used microcomputers for instructional purposes.

The level of microcomputer use in secondary social studies found in this study is higher than indicated in previous general surveys of computer use in schools. This difference might be explained in a number of ways. First, it is possible that microcomputer-using teachers might have been more likely than non-users to respond to the questionnaire, thereby producing a skewed sample. A second possible explanation of these differences is the source of the information used to collect data in various surveys of microcomputer use in schools. In Becker's surveys, for example, the "primary computer-using teacher" is identified by the school principal and used as the major information source for how computers are used in classrooms. By selecting informants is manner, measures of computer use in social studies might be less accurate, since the primary computer-using teacher is not likely to be a social studies teacher.

Social Studies Teachers Attitudes Toward and Experience with Microcomputers

Despite the the lack of microcomputer use reported by social studies teachers, attitudes toward the integration of microcomputers in the social studies curriculum were found to be very positive. Nearly 80% of the respondents agreed that microcomputers can enhance the quality of education a student receives and they also agreed that providing microcomputers for student use is a necessary investment for schools. Nearly three-fourths of the teachers indicated

that they would prefer to use microcomputers for instruction more frequently than they are currently. the respondents overwhelmingly disagreed with statements that microcomputers would complicate their job more than they would like (80%) and that using microcomputers would take too much time away from the "the basics" (86%).

All respondents were asked about their prior experience with computers and training in the use of microcomputers as an instructional tool. Their responses indicate that one of the major barriers to increased use of microcomputer technology in social studies is the lack of teacher preparation. Seventy-four percent of the teacher reported that they had no microcomputer experience. Twenty-five percent indicated that they had "learned on their own." and only 1% of the teachers responded that they had received microcomputer training as a part of inservice workshops. None of the respondents had either taken the equivalent of a three college credits in computer education or had training specifically in the use of microcomputers in social studies The findings regarding lack of social studies teachers' knowledge and experience with microcomputers supports previous findings of White (1986), Sabir (1986), and Ashley (1983).

This contrasts sharply with Lehman's (1985) findings about the experience and training of science teachers. Fifty percent of the science teachers in his survey had at least one college course on microcomputers and 77% had

participated in inservice workshops on using microcomputers to teach science.

Profile of Microcomputer Users and Non-Users

Social studies teachers currently integrating microcomputers into their instruction were fairly evenly distributed across content areas in social studies (see Table 2). Not surprisingly, the bulk of microcomputer users were American history teachers, however, computer-related instruction was also frequently used to teach current events, government/civics, and economics.

It is clear from the above discussion that lack of teacher training is a major obstacle to the integration of microcomputers in social studies classes, however this is not the sole or even primary reason for teachers choosing not to use computer-related instructional strategies. Of those teachers not currently using microcomputers only 45% cited lack of knowledge or training as a reason for their decision.

The most frequently cited reasons for not using microcomputers can be described as structural or organizational in nature. Sixty-two percent of the non-users cited insufficient numbers of microcomputers for students in their classes. And the same number cited difficulties in scheduling access to microcomputers. Thirty-four percent indicated problems in supervising students during instructional computing sessions as reasons for not using microcomputers. Ehman and Glenn (1987) and

Robbat (1984) also found a the scarcity of microcomputers available for use by social studies learners.

Access and supervision are issues that must be addressed if increased integration of microcomputers into social studies classes is to be achieved. Becker (1984) highlights these concerns in his discussion of the important organizational adjustments schools must make in order to provide opportunities for increased integration of computers in academic subjects. He points out that most schools with microcomputers have enough for simultaneous use by less than one-fourth of the students in a single classroom. For enhanced integration then, "schools must assign to a single teacher the supervisory and instructional responsibility for only a small number of students at once" (Becker, 1987, p. 8). More importantly, according to Becker, schools need to begin exploring how to best use the limited numbers of microcomputers while providing continuous instruction and supervision to whole classes.

> We often forget that the computer, although similar in many attributes to instructional media like television, overhead projectors, and film-strips, shares with the textbook--and not with these others--the characteristic of generally being used by an individual student rather than a classroom of students at any one time. (Becker, 1984, p. 16)

Other factors related to teachers' decisions not to use microcomputers included the available software. A majority

(52%) of non-users indicated that a lack of appropriate or adequate quality software discouraged them from using microcomputers.

While teachers at the high school level as well as teachers with fewer years of experience were found to be less likely to use microcomputers, contingency tables generated by SPSSX CROSSTABS procedure indicated that there were no statistically significant relationships between microcomputers use and grade level taught or year of teaching experience.

However, gender was found to be a significant factor in distinguishing microcomputer users from non-users. Women, who made up 30% of the sample, were found to be less likely to use microcomputers in their social studies classes (see Table 3). This finding is consistent with the literature on equity of access to and use of technology, which indicates that females and minorities may not use computers, even when access opportunities are equal, because of stereotyping (Kinzer, Sherwood, and Bransford, 1986).

How Microcomputers Are Used in Social Studies Classes

Table 4 summarizes data about how microcomputers are used in social studies classes. Only 39% of the teachers using microcomputers did so as often as once every two weeks and 61% of these teachers used microcomputers once a month or less. Therefore, teachers reportedly using microcomputers in social studies did not use them with great regularity.

The typical instructional computing session was conducted with small groups of students working at each microcomputer (76% of the teachers reported sessions with 2 or more students per microcomputer), with the teacher assigning students to use the machines for a specific task and time period. However, 20% of these teacher reported that students could choose when to use the microcomputer. About one-quarter of the teachers reported having access to a sufficient number of machines to organized sessions with one student per microcomputer. In cases where student were taking turns on a machine, teachers typically assigned related, non-computer-based content or skill practice to the students without access to a microcomputer. Microcomputers were typically located in a laboratory or library setting; only 25% of the respondents had a microcomputer in their classrooms. The length of typical computing sessions ranged from five to 60 minutes, with the average session lasting 27 minutes.

The arrangement of having some students using microcomputers while the rest of the class is doing seatwork is more common than any other, however, Becker (1984) questions the effectiveness of this approach to providing students with computer experience. He says that,

> The time spent at the computer is likely to be time well spent. Repeated observation suggests greater engagement with computer-based learning activities, and most research finds measurable improvement in learning

> efficiency--at least for well-defined learning tasks. On the other hand, some research has shown that seatwork time involves more distraction and less on-task time than direct instruction...Thus if teachers alter their instructional delivery methods and assign more seatwork than they otherwise would in order to enable greater use of computers, the net result may be that overall time-on-task, engagement, and learning will be negligibly or negatively affected. (1984, pp. 9-10)

Most of the instructional computing time in social studies classrooms is spent with students working in groups or pairs. In order to effectively capitalize on this arrangement however, it is important that teachers consider using software designed for group use and/or to structure group computing based upon cooperative learning principles.

Microcomputers can be used as a presenter of instruction or as a tool for learning social studies skills and content. Most of the respondents (66%) in this study reported using microcomputers to present social studies content to students in the form of drill and practice, tutorial, and simulations/game programs (see Table 5). Over 30% of the microcomputer users reported that their students used microcomputers for word processing and database applications in social studies. Social studies teachers are using microcomputers for a wide variety of purposes. Based upon these data, however, they seem to be underutilizing

applications-oriented software, which deals with generic functions such as data management/manipulation, word processing, and graphics.

Influence of Context Variables on Microcomputer Use

In their review of research on the extent of microcomputer use in social studies Ehman and Allen (1987) found a wide variation in social studies computer use across states.

> Idaho researchers, for example, estimated that 2.5% of its computer use was for social studies instruction (Tucker, 1982). Louisiana officials reported 17% for social studies (Louisiana State Department of Instruction, 1985) and in Indiana 5% of the social studies departments in the high school reported student use of social studies drills, tutorials, problem-solving, and simulation programs (Green, 1983). In 1982 Texas reported about 4%; Oklahoma none, and 1983 figures for Massachusetts showed 22% of its social studies departments using computers (Robbat, 1984). (Ehman & Allen, 1987, p. 7)

In addition to these figures, South Carolina officials reported that in 1987 social studies was the least likely academic area to use computer-related instruction (South Carolina Department of Education, 1987) and Lamon (1986) found that in Oregon secondary schools computer use was mainly in mathematics and science classes.

With these findings in mind it was hypothesized that there might be a relationship between microcomputer use and geographic location. And, in fact, microcomputers use in social studies was found to be somewhat dependent upon the geographic location of the school. Respondents from the southeastern states reported a significantly lower rate of microcomputer use compared to the other regions (see Table 6). Also, schools in rural areas used microcomputers less frequently than schools in urban or suburban settings, however, this latter difference was not statistically significant.

Teachers were also asked if their schools had any formal written plans for a computer literacy curriculum. Sixty-three percent responded that their school had such a plan or that one was currently under development. Forty percent of the school districts had a computer literacy requirement for students as part of their curriculum and 6% required all teachers to have computer training. However, only 31% of the respondents indicated that formal plans existed for the integration of microcomputers in the content areas. This is supportive of the current literature that indicates that schools continue to emphasize teaching about computers rather than teaching with them (Lockheed & Mandinach, 1986).

Not surprisingly there is a statistically significant difference favoring the use of microcomputers in social studies for schools with any type of formal plan addressing

the use of computers in the content areas. This parallel's Becker's (1984) findings for elementary school, which indicate that microcomputers are used more effectively and with greater levels of access to all students when groups of teachers and the school principal jointly planned computer acquisition and organized how computers would be used.

Lastly, microcomputer use has previously been related to size of the faculty and number of colleagues using microcomputers (e.g., Becker, 1985; Lehman, 1985), however, in this study no significant relationship was found between faculty size and microcomputer use.

Conclusions

Very few social studies teachers are using microcomputers in their classrooms, and those using them do so infrequently. Based upon the sample used in this study, there are several possible causes for the lack of impact microcomputers technology has had on social studies teaching, learning, and curriculum. First, structural and organizational problems seem to be the primary reasons for the lack of more extensive integration of microcomputers into social studies classrooms. In particular, teachers noted the insufficient numbers or the inaccessibility of machines for use in social studies. Other related concerns cited by teachers included difficulties in scheduling use of microcomputers and supervision of students during instructional computing sessions.

Secondly, there were a significant number of concerns expressed regarding the quality or appropriateness of software for use in social studies classes, however, teachers perceptions on this question may be subject to question because over 70% reported having no experience with microcomputers. Thirdly, lack of experience and training for teachers in the use of applications software (i.e., word processing) and content specific applications of microcomputers constitute a fundamental barrier to the integration of microcomputers in social studies instruction.

Despite the limitations outlined above, social studies teachers hold generally positive attitudes toward the use of microcomputers in classrooms and, in this study, indicated a desire to increase their use of microcomputers in teaching social studies. With these points in mind, some appropriate responses to the findings of this study might be to: (a) increase the opportunities for both preservice and inservice social studies teachers to receive well structured applications-based microcomputer training; (b) investigate how problems of access, organization of instructional time, and supervision of students might be resolved; and most importantly (c) study those situations where social studies teacher are currently utilizing microcomputers in an attempt to assess the impact of this technology on student acquisition of knowledge and cognitive skills as well as their affective responses to social studies curricula when microcomputers are used.

As Becker has pointed out, given the organization and responsibilities of schools, simply grafting microcomputers on the school will not result in extensive or effective use. The most appropriate and sophisticated software packages will be useless "in a school context without a means of using them with the current ratio of students to computers, without a plan for mutually reinforcing learning at the computer terminal and learning away from the computer, and without an appropriate model of what instruction should be provided to which students at what age" (Becker, 1984, p. 15)

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Table 1

Description of Survey Respondents

Variable	n	%
Geographic region		
northeast	44	17%
southeast	52	20%
central	97	37%
west	69	26%
School setting		
urban	42	16%
suburban/small city	136	52%
rural	33	32%
Grade level taught		
middle school	99	38%
high school	130	50%
middle & high school	33	12%
Years teaching experience		
0 - 3 years	14	5%
4 - 10 years	35	13%
11+ years	213	82%
$\bar{X}$ years teaching = 14		

Table 2

Subjects Taught by Microcomputer Users[1]

	Taught by micro users		Use micros for instruction	
Subject	n	%	n	%
American history	47	67%	39	83%
World history	29	42%	18	62%
State history	15	21%	8	54%
Government/civics	35	50%	25	71%
Economics	22	31%	16	72%
Sociology/ anthropology/ psychology	11	16%	6	54%
Current events	22	31%	20	90%
Other	9	13%	7	78%

[1] Percentages do not add up to 100% because teachers could indicate teaching more than one subject.

Table 3

Microcomputer Use by Gender of Teacher

	Microcomputer users		Microcomputers non-users	
Gender	n	%	n	%
Female	16	20%	63	84%
Male	57	32%	123	68%

X^2 (1) = 8.114, $p \leq .04$

Table 4

Microcomputer Use in Secondary Social Studies Classes

Variable	n	%
Frequency		
Once/2 weeks or more	26	39%
Once/month or less	41	61%
Students/microcomputer		
1 student/micro	16	24%
2 students/micro	30	44%
3+ students/micro	22	32%
Average length of computing session		
5 - 20 minutes	27	38%
21 - 40 minutes	33	47%
41+ minutes	11	15%
$\bar{X}$ session length = 27 minutes		

Table 5

Type of Computer Programs Used in Social Studies Classes

Programs used	n	$\bar{X}$% of CAI time
Drill and practice	42	19%
Tutorials	37	13%
Simulations	48	19%
Games	39	14%
Databases	23	8%
Word processing	28	14%
Other	5	3%

Table 6

Microcomputer Use by Geographic Region

	Use microcomputers		Do not use microcomputers	
Region	n	%	n	%
northeast	15	35%	28	65%
southeast	6	12%	43	88%
central	32	33%	65	67%
west	22	32%	46	68%

X^2 (3) = 8.49, $p < .04$